



[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 25

[Docket No. FAA-2013-0920; Special Conditions No. 25-13-12-SC]

Special Conditions: Learjet Model 45 Series Airplanes; Aircraft Electronic System Security Protection from Unauthorized External Access.

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final special condition; request for comments.

SUMMARY: These special conditions are issued for the Learjet Model 45 series airplanes.

These airplanes will have a novel or unusual design feature associated with the architecture and connectivity capabilities of the airplanes' computer systems and networks. Connectivity to, or access by, external systems and networks may result in security vulnerabilities to the airplanes' systems. The applicable airworthiness regulations do not contain adequate or appropriate safety standards for this design feature. These special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

DATES: The effective date of these special conditions is [insert date of publication in the *Federal Register*]. We must receive your comments by **[insert a date 45 days after date of publication in the *Federal Register*]**.

ADDRESSES: Send comments identified by docket number **FAA-2013-0920** using any of the following methods:

- Federal eRegulations Portal: Go to <http://www.regulations.gov/> and follow the online instructions for sending your comments electronically.

Mail: Send comments to Docket Operations, M-30, U.S. Department of Transportation (DOT), 1200 New Jersey Avenue, SE, Room W12-140, West Building Ground Floor, Washington, D.C., 20590-0001.

Hand Delivery or Courier: Take comments to Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 8 a.m. and 5 p.m., Monday through Friday, except federal holidays.

Fax: Fax comments to Docket Operations at 202-493-2251.

Privacy: The FAA will post all comments it receives, without change, to <http://www.regulations.gov/>, including any personal information the commenter provides. Using the search function of the docket web site, anyone can find and read the electronic form of all comments received into any FAA docket, including the name of the individual sending the comment (or signing the comment for an association, business, labor union, etc.). DOT's complete Privacy Act Statement can be found in the *Federal Register* published on April 11, 2000 (65 FR 19477–19478), as well as at <http://DocketsInfo.dot.gov/>.

Docket: Background documents or comments received may be read at <http://www.regulations.gov/> at any time. Follow the online instructions for accessing the docket or go to the Docket Operations in Room W12-140 of the West Building Ground Floor at 1200 New Jersey Avenue, SE, Washington, D.C., between 9 a.m. and 5 p.m., Monday through Friday, except federal holidays.

FOR FURTHER INFORMATION CONTACT: Varun Khanna, FAA, Airplane and Flight Crew Interface Branch, ANM-111, Transport Airplane Directorate, Aircraft Certification Service, 1601 Lind Avenue SW, Renton, Washington 98057-3356; telephone 425-227-1298; facsimile 425-227-1149.

SUPPLEMENTARY INFORMATION:

The FAA has determined that notice of, and opportunity for prior public comment on, these special conditions are impracticable because these procedures would significantly delay issuance of the design approval and thus delivery of the affected aircraft. The FAA has also determined that notice of these special conditions is unnecessary because the substance of these special conditions has been subject to the public comment process in several prior instances with no substantive comments received. The FAA therefore finds that good cause exists for making these special conditions effective upon publication in the *Federal Register*.

Comments Invited

We invite interested people to take part in this rulemaking by sending written comments, data, or views. The most helpful comments reference a specific portion of the special conditions, explain the reason for any recommended change, and include supporting data.

We will consider all comments we receive by the closing date for comments. We may change these special conditions based on the comments we receive.

Background

On April 21, 2010, Learjet applied for both a change to Type Certificate No. T00008WI and for a supplemental type certificate (STC) for an installation of an avionics upgrade in the Learjet Model 45 series airplanes. The Model 45 series airplanes are swept-wing aircraft

equipped with two Honeywell TFE731-40BR turbojet engines, weighing 13,890 pounds empty and capable of carrying up to nine passengers and two crew members.

The proposed Learjet Model 45 avionics architecture is new and novel for commercial transport airplanes by allowing connection to airplane electronic systems and networks, and access from aircraft external sources (e.g., wireless devices, Internet connectivity) to the previously isolated airplane electronic assets.

Learjet's proposed design is considered by the FAA to be an architecture which introduces potential security risks and vulnerabilities not addressed in current regulations and aircraft-level or system-level safety assessment methods. Consequently, these special conditions address security and safety issues arising from the use of this type of architecture, and foreseeable flight and maintenance applications impacted by these interconnected data networks and the addition of external access points.

Type Certification Basis

Under Title 14, Code of Federal Regulations (14 CFR) 21.17, Learjet must show that the Model 45 series meets the applicable provisions of 14 CFR part 25, as amended by Amendments 25-1 through 25-128.

If the Administrator finds that the applicable airworthiness regulations (i.e., 14 CFR part 25) do not contain adequate or appropriate safety standards for the Model 45 series because of a novel or unusual design feature, special conditions are prescribed under § 21.16.

Special conditions are initially applicable to the model for which they are issued. Should the type certificate for that model be amended later to include any other model that incorporates

the same novel or unusual design feature, the proposed special conditions would also apply to the other model under § 21.101.

In addition to the applicable airworthiness regulations and proposed special conditions, the Learjet Model 45 series airplane must comply with the fuel vent and exhaust emission requirements of 14 CFR part 34 and the noise certification requirements of 14 CFR part 36 and the FAA must issue a finding of regulatory adequacy under § 611 of Public Law 92-574, the "Noise Control Act of 1972."

The FAA issues special conditions, as defined in 14 CFR 11.19, under § 11.38, and they become part of the type-certification basis under § 21.17(a)(2).

Novel or Unusual Design Features

The Learjet Model 45 series airplanes will incorporate the following novel or unusual design features: digital systems architecture composed of several connected networks. The proposed architecture and network configuration may be used for, or interfaced with, a diverse set of functions, including:

1. Flight-safety related control, communication, display, monitoring, and navigation systems (aircraft control functions);
 2. Operator business and administrative support (operator information services);
 3. Passenger information and entertainment systems (passenger entertainment services);
- and,
4. The capability to allow access to or by systems external to the airplane.

Discussion

The architecture and network configuration in the Learjet Model 45 series airplanes may allow increased connectivity to, or access by, external airplane sources, airline operations, and maintenance systems to the aircraft control functions and airline information services. The aircraft control functions and airline information services perform functions required for the safe operation and maintenance of the airplane. Previously these functions and services had very limited connectivity with external sources. The architecture and network configuration may allow the exploitation of network security vulnerabilities resulting in intentional or unintentional destruction, disruption, degradation, or exploitation of data, systems, and networks critical to the safety and maintenance of the airplane. The existing regulations and guidance material did not anticipate these types of airplane system architectures. Furthermore, 14 CFR regulations and current system safety assessment policy and techniques do not address potential security vulnerabilities, which could be exploited by unauthorized access to airplane systems, data buses, and servers. Therefore, these special conditions are issued to ensure that the security (i.e., confidentiality, integrity, and availability) of airplane systems is not compromised by unauthorized wired or wireless electronic connections.

For the reasons discussed above, these special conditions contain the additional safety standards that the Administrator considers necessary to establish a level of safety equivalent to that established by the existing airworthiness standards.

Applicability

As discussed above, these special conditions are applicable to the Learjet Model 45 series airplanes. Should Learjet apply at a later date for a change to the type certificate to include

another model incorporating the same novel or unusual design feature, the special conditions would apply to that model as well.

Conclusion

This action affects only certain novel or unusual design features on one model series of airplanes. It is not a rule of general applicability.

The substance of these special conditions has been subjected to the notice and comment period in several prior instances and has been derived without substantive change from those previously issued. It is unlikely that prior public comment would result in a significant change from the substance contained herein. Therefore, the FAA has determined that prior public notice and comment are unnecessary, and good cause exists for adopting these special conditions upon publication in the *Federal Register*. The FAA is requesting comments to allow interested persons to submit views that may not have been submitted in response to the prior opportunities for comment described above.

List of Subjects in 14 CFR Part 25

Aircraft, Aviation safety, Reporting and recordkeeping requirements.

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701, 44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for Learjet Model 45 series airplanes.

***System Security Protection for Aircraft Control Domain and Airline Information
Services Domain from External Access.***

1. The applicant must ensure airplane electronic system security protection from access by unauthorized sources external to the airplane, including those possibly caused by maintenance activity.

2. The applicant must ensure that electronic system security threats are identified and assessed, and that effective electronic system security protection strategies are implemented to protect the airplane from all adverse impacts on safety, functionality, and continued airworthiness.

3. The applicant must establish appropriate procedures to allow the operator to ensure that continued airworthiness of the aircraft is maintained, including all post-type-certification modifications that may have an impact on the approved electronic system security safeguards.

Issued in Renton, Washington, on October 22, 2013

/s/

Stephen P. Boyd
Acting Manager, Transport Airplane Directorate
Aircraft Certification Service

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